

CHAPTER 1

INTRODUCTION

1.1. Background

In this project I want to solve the problem for fan users. Many people complain about the problem of expensive electricity costs. There are many possibilities that cause electricity costs to be expensive, one of the reasons is not turning off the fan when leaving the room. Most people don't turn off the fan when they leave the room because they forgot or were in a hurry. In addition, there are also problems that occur in some people who almost every day have to go back and forth to the fan just to get the right wind, such as when suddenly the situation in the room becomes very hot, making us have to stand up just to increase the fan speed.

To solve this problem, I created a system using an LM35 sensor to detect temperature and an Ultrasonic sensor to determine the distance between the fan and the object. This system also uses the Fuzzy Sugeno algorithm to calculate the final value of the data obtained by the LM35 sensor and Ultrasonic sensor, so that the final value of this algorithm will affect the fan speed. I added an LED as an indicator light to know the fan speed. I also use 2 Ultrasonic sensors on the right and left to move the fan with the help of a servo so that it rotates right and left following people in the room.

Therefore, I made an automatic fan that can turn itself off and on at a speed that adjusts the room temperature and the distance of the object from the fan. With this automatic fan, it can help reduce electricity costs and make people calmer when traveling.

1.2. Problem Formulation

1. What is the percentage success rate of the servo can move to the right and left?
2. What is the percentage success of the Fuzzy Sugeno algorithm in determining fan speed and LED brightness?
3. Can using the Fuzzy Sugeno algorithm help save electricity?

1.3. Scope

1. The data used is the value obtained from the LM35 sensor and ultrasonic sensor.
2. The distance data used to calculate the algorithm uses only one Ultrasonic sensor.
3. The fan is simulated with LEDs because Arduino can't supply high voltage portable fans so the fan can't spin. While the brightness of the LED can be adjusted with a PWM signal based on a microcontroller.

1.4. Objective

This project aims to find out how well the fan functions by using the Fuzzy Sugeno algorithm calculation to adjust the fan speed and LED brightness from the temperature in the room and the distance between the object and the fan.